The Obsoletism of Enumerative Speculation in Sāmkhya System

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ABSTRACT

Despite the primitivism and obsolescence of speculation, the doctrines of Sāmkhya are still recognized as current and followed by many devotees in Hindu religions and by contemporary movements. So Vaishnavas, Shaivas, Yoga practitioners, Theosophists and Esotericists understand that the tattwas “cosmology” is an eternal, therefore current, revelation. However, without knowledge of the mechanism behind the changes over time, ancient speculators were only able to understand the world from a synchronous perspective, that is, everything has always been the way it is now. Thus, the categorization and enumeration of things and phenomena were enlightening views for the ancients, as they put things in their proper places and in a hierarchical order. This study intends to show and analyze the anachronistic problem in attributing topicality to the enumerative speculations of the Sāmkhya System.

KEYWORDS: Sāmkhya System, Enumeration, Categories, Sāmkhya Kārikā

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The Importance of Categorization in Antiquity

Without knowledge of the evolutionary process of nature, classifying everything through categories and classes, composed of items that were thought to be immutable, was a useful means of understanding the world for ancient thinkers. The importance of categorizing was so great that the organizers of Corpus Aristotelicum, Aristotle's collection of writings, placed the text Κατηγορίαι - Categoriai (Categories) at the beginning not only of the group of texts on Logic, Organon, but also of the entire collection of Corpus Aristotelicum. To understand Aristotelian thinking, it is necessary to know the Categories, as it works as an introduction to the thinking of the philosopher from Stagira. In fact, it is through categorization that ideas and objects are identified, recognized, differentiated and classified, that is, categorization helps in the organization of objects and creatures in the world into groups, classes, types and species, in order to identify them in their differences with other objects and species.

Below the 10 Aristotelian Categories (Cooke, 1955: 16s):

(1) Substance, gr. οὐσίαν, ousian; Latin: nounĭa
(2) Quantity, gr. ποσόν, posón; Latin: quantās
(3) Quality, gr. ποιόν, poion; Latin: quālĭtās
(4) Relation, gr. πρός τι, pros ti; Latin: relātĭō
(5) Place, gr. ποῦ, pou; Latin: ubī

(6) Time, gr. ποτέ, poté; Latin: quando
(7) State, gr. κεῖσθαι, keisthai; Latin: situs
(8) Posture, gr. ἔχειν, echein; Latin: habere
(9) Action, gr. ποιεῖν, poiein; Latin: āctiō
(10) Passion, gr. πάσχειν, paschein; Latin: passĭō

Although both can be called categories, there are significant differences between the Aristotelian Categories (Κατηγορίαι) and the Sāmkhya Categories (तत्त्वानि - Tattwas).[1] The former are physical and not hierarchical, while the latter are metaphysical and hierarchical, as we shall see below.

A similar example is the Dhammasanganī (Compendium of the Elements of Existence), also the first book in the collection of the Abhidhamma Pitaka (Collection of Speculative Texts) in the Pali Canon of Theravāda Buddhism. A text with long enumerations and tiresome repetitions[2] of lists of

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[1] तत्त्वम्– Tattwam is a Sanskrit term that is difficult to translate. It is the combination of the words तत् (tat), “that”, plus the ending त्वम् (twam), which is a ending to give the meaning equivalent to “ness” in English, as in the word happy + ness = happiness. Therefore, literally, Tattwam means "thatness". However, the term is most commonly translated as "existence principle", "element of existence", "category" or "reality".

[2] The repetitions are so exhaustive in this text that the translator does not reproduce the repetitive paragraphs; differently she sends the reader to consult the previous paragraphs from which the repetitions are extracted. Since the repetitions are numerous, the reading becomes a very

dhammas (Sanskrit: dharmas), Elements of Existence, something like Buddhist Categories, some dhammas correspond to the tattwas of the Sāmkhya tradition, whose text serves as an introduction to the study of Buddhist speculations (Rhys Davids , 1975).

Also, in the study of the Six Orthodox Systems of Hinduism (षड्दर्शनानि - Shaddarshanāni), the study is done in the following order of associated systems (samānatantras): Nyāya / Vaisheshika (Logic and Atomism), Sāmkhya / Yoga (Categorization of the Principles and Discipline of Meditation) and Mīmānsā / Vedānta (Ritualism and Speculation on the Supreme Being). Therefore, the study starts with the learning of Atomism (vishesha) and the Principles of Existence (tattwas), of the Vaisheshika and Sāmkhya systems respectively, therefore it starts with the study of the categories.

It seems that, to some extent, there was a consensus among thinkers in antiquity that the first lesson to understand speculations or philosophies was the preliminary knowledge of the Categories (tattwas, dhammas, category, padārthas, etc.).

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tiring “back and forth” of pages, in a work of almost 400 pages. The repetition of passages is not only a peculiarity of Dhammasanganī, but also a common feature in many texts in Buddhist literature, whether Pali or Sanskrit.

Meaning of Word Sāmkhya

The term सांख्यं - Sāmkhyam, in the neutral gender and in the nominative case, which appears in the devanāgarī script as सांख्यं - Sāmkhyam (Apte, 1978: 978) or as साङ्ख्यं - Sānkhyam (spokensanskrit.org), is the name of this system, which derives from the adjective सांख्य - sāmkhya (relative to number, calculation, enumeration, numeral, numeric) and the feminine noun संख्या - samkhyā, which means: “number”, “calculation”, “count” and “enumeration”. As an adjective, the term सांख्य - sāmkhya refers to any set or grouping and can be used in any investigation, in which enumeration or calculation is an important feature (example: mathematics, accounting, etc.). As a masculine noun, सांख्य - sāmkhya refers to someone who calculates, enumerates or discriminates (example: a calculator, an accountant, etc.). As a neutral noun, सांख्यं - sāmkhyam, the term refers to the name of an ancient system of speculation that arose in India. In addition, other related words are the verb संख्या - samkhyā, "to count", "to calculate", "to add" and "to enumerate", hence the adjective संख्यातित - samkhyātita, "innumerable".

Gerald J. Larson defined the Sāmkhya[3] system as follows: “a specific system of dualistic philosophizing that proceeds through the method of enumerating the contents of experience and the world with the purpose of achieving radical liberation (moksha, kaivalya) from frustration and rebirth” (Larson, 1987: 03). Depending on the medium in which this philosophizing developed, Sāmkhya is a combination of cosmological speculation and reflection on religious beliefs.

Development of the Concept of Sāmkhya

In its most ancient sense, the term Sāmkhya meant a methodological scheme of investigating the components of a subject, such as a form of decomposition for the purposes of classification and enumeration, whether it be the components of the human body, or the components of ritual sacrifice, or the components of heaven or the basic components of the formation of the world and life. In this sense, the Sāmkhya speculation is included as one of the modalities of Ānvīkshikī (Science of Research), along with Yoga and Lokāyata (Materialism), in Kautilya's Arthashāstra (Radhakrishnan, 1989:

[3] Sāmkhyam is the name of this system with the word neutral in the nominative case; however, most authors, for the sake of simplicity, prefer to name this system with the word without the ending that identifies the case, that is, Sāmkhya, so this will be the spelling that will be used onwards.

198). In the initial phase, the method par excellence for starting the investigation of something was through the enumeration of its components, through systematic reasoning of decomposition. Thus, Ānvīkshikī was not a philosophy, as we understand the term today, more specifically, it was "a kind of general 'scientific' investigation through the systematic enumeration of basic principles" (Larson, 1987: 04). This practice, over time, was introduced in other traditions, that is why we now find so many doctrines, whether Hindu or Buddhist, with numerous enumerations (classifications) of components of a given theme, sometimes in hierarchical order. For example, some Buddhist texts are full of long and tiresome enumerations of virtues, vices, moral laws, monastic rules, etc., as well as components (Dhammas - Elements) of existence (example: the Dhamma Sangati, the first Abhidhamma Pitaka collection). Anyway, in this old initial period of development, Sāmkhya was not yet a system of thought (darshana), as it would become in the future, as the focus at this stage was more on the methodology of how to investigate and not on the content of the ideas resulting from this methodology. In this period, reasoning began to be used, but it was reasoning that was not yet dissociated from the immediacy of empirical experience, the accumulated inheritance of ritual practices and priestly authority. Even so, there was some attempt at intellectual

independence and a growing recognition that thought itself could be an autonomous activity for understanding the world and life.

While, in the oldest period, the term Sāmkhya generally meant any enumerated set of principles, in a subsequent period, the notion became a reasoning methodology that results in spiritual knowledge (vidyā, jnāna, viveka), which leads to liberation from the cycle of births and deaths. That is, soteriology is introduced into the notion of Sāmkhya. In other words, the term Sāmkhya also takes on a religious character, in which the enumeration works as a preparation for the discrimination of the path that will lead to the liberation from suffering and rebirth. The term Sāmkhya no longer means just a scheme of enumeration and classification of principles, as in the previous period, it now has an emancipating role. The main examples of this notion in this period are the notions of Sāmkhya in the ancient Upanishads, Mokshadharma and Bhagavad Gītā. Therefore, "it is in this second period that Sāmkhya becomes a predominant notion in those environments in which meditation, spiritual exercises and religious cosmology represented crucial issues" (Larson, 1987: 05). Ultimately, Sāmkhya becomes a methodology for achieving salvation through discriminative knowledge.

In a third period of development, Sāmkhya assumes the meaning of a system, when it is definitely organized as a speculative current. It is in

this period that the process of homologation and canonization of nuclear ideas is consolidated, such as the standardization of the number of tattwas, together with the precise order of enumeration, the officialization of the plurality of purushas, the recognition of the instruments of knowledge (pramānas), the development of interest in inference (anumāna), the notion of Prakrti and the Gunas, as well as the role of the latter in creation, the establishment of the idea of the pre-existence of the effect on the cause (satkārya) and, finally, the frequent participation of its followers in debates with rival systems, which made it possible to recognize the contrasts with other speculative and religious currents. It is in this period that the texts systematizing ideas are composed, especially the one that would become the reference text, the Sāmkhyakārikā authored by Ishwarakrshna (c. 350-450 C.E.), as well as the many comments that followed. Due to the plurality of surviving texts, it is at this stage that the history of the Sāmkhya tradition can be better understood. This period of Sāmkhya was historically known as Classic Sāmkhya.

In its most advanced and systematized phase, Sāmkhya finally became one of the Saddarshanāni (सड्दर्शनानि - Six Orthodox Systems of Hindu Thought), along with Nyāya (Logic), Vaisheshika (Atomism), Yoga (Meditation Method), Mīmānsā (Ritualism) and Vedānta (Theology).

The Development Periods

Gerald J. Larson divided the development into four periods (1979: 75s):

1) The Old Speculations: starting with the speculative Vedic hymns until the oldest Upanishads. This period extends from the 9th and 8th centuries B.C.E. until the emergence of Jainism and Buddhism in the 5th century B.C.E.

2) Proto-Sāmkhyas Speculations: include the Upanixades of the middle period, the Bhagavad Gītā and the Mokshadharma chapter of Mahābhārata. This period extends from the 4th century B.C.E. until the 1st century C.E. In these first two periods, as we saw above, Sāmkhya was not yet an organized system, but only a methodological scheme for enumerating the components of objects or themes (examples: tattwas and gunas) with or without a hierarchical order. Also, a means of achieving liberation from suffering through knowledge or reasoning.

3) The Speculations of Classical Sāmkhya: includes Ishwarakrshna's Sāmkhya Kārikā, Yoga Sūtra and corresponding comments. This period extends from the 1st century C.E. until the 10th and 11th centuries C.E. Most authors consider this period as the Sāmkhya par excellence, when it was organized as a system.

4) Late Sāmkhya Rebirth: includes Sāmkhyapravachana Sūtra and his comments,

along with Tattwasamāsa Sūtra. Stretches from the 15th century C.E. until the 17th century C.E. In this period, the Sāmkhya system was infiltrated by theistic and vedantine ideas.

The Enumeration of the 25 Tattwas of the Classic Sāmkhya

Before theorizing and then confirming the phenomenon of evolution, ancient philosophies were very concerned with the strict classification of items in strict categories, that is, they were speculations that reached typological results. Classifying things, phenomena and experiences into categories was a great investigative feat in the past, many ancients thought that categorization was sufficient clarification about the nature of things, that is, before the emergence of experimental science, the work of enumerating items within a category or class was sufficiently enlightening. However, after the recent emergence of the Theory of Evolution and, more influentially, the confirmation of the phenomenon of Evolution, this classificatory momentum has lost strength in research, although it has not disappeared, only to recognize that things, species and phenomena cannot be classified within strict categories, due to the evolutionary process. Items or phenomena in one category evolve or juxtapose with items in other categories, when considering the billions of years of natural evolution. Thus, some

speculations from the past exaggerated the classificatory emphasis and one of them was that recorded in the Sāmkhya system. In addition to the latter, Buddhism, Jainism and Vaisheshika atomism are eminently interested in categorizing elements of existence: Dharmas (Pali: Dhammas - Elements of Existence), Dravyas (Substances) and Padārthas (Categories) respectively.

Below is the list of the 25 Tattwas (तत्त्वानि - Tattwāni - Principles of Existence) of the Classic Sāmkhya System:

(1) Pure Consciousness (पुरुष - Purusha)

(2) Primordial Matter (प्रकृति - Prakrti)

(3) Intellect (महत् - Mahat or बुद्धि - Buddhi)

(4) Selfishness (अहंकार - Ahamkāra)

(5) Mind (मनः - Manas)

The 5 Organs of Knowledge (ज्ञानेन्द्रियाणि - Jnānendriyāni or Buddhendriyāni):

(6) Heard (श्रोत्रं - Shrotram)

(7) Skin (त्वच् - Twach)

(8) Eye (चक्षु - Chakshu)

(9) Language (जिह्वा - Jihwā)

10) Nose (नासा - Nāsā)

The 5 Organs of Action (कर्मेन्द्रियाणि - Karmendriyāni):

(11) Voice (वाच् - Vāc)

(12) Hands (पाणि - Pāni)

(13) Feet (पाद - Pāda)

(14) Anus (पायु - Pāyu)
(15) Reproductive organ (उपस्थ - Upastha)
The 5 Subtle Principles (तन्मात्राणि - Tanmātrāni):
(16) Sound (शब्द - Shabda)
(17) Tact (स्पर्श - Sparsha)
(18) Form (रूप - Rūpa)
(19) Taste (रस - Rasa)
(20) Smell (गन्ध - Gandha)
The 5 Dense Elements (महाभूतानि - Mahābhūtāni):
(21) Ether / space (आकाश - Ākāsha)
(22) Air (वायु - Vāyu)
(23) Fire (तेजस् - Tejas)
(24) Water (अप् - Ap)
(25) Earth (पृथिवी - Prthivī).

Differences in Tattwas Enumerations

Despite the care in enumerating, the enumerations were not always uniform at different times and in different authors.

A first rudimentary enumeration of the structure of the cosmos, which can, in a way, be called the proto-Sāmkhya classification, is mentioned in Bhagavad Gītā in passage VII.04, with only eight Tattwas (Principles of Existence):

"Earth (bhūmi), water (āpas), fire (anala), air (vāyu), ether (kham),[4] mind (manas), intellect (buddhi) and egoism (ahamkāra), this is my divided Matter (Prakrti) in eight parts ".

Further on, in passages XIII.02 and 05, a more articulated and closer enumeration to the

[4] The Sanskrit term Kham (or Akāsha) is commonly translated as ether. The latter, in Western physics, until at least the 19th century, was understood as a substance of great elasticity and subtlety, which penetrated the stellar and planetary space, not only filling the interplanetary spaces, but also the intermediate spaces between the particles of the air and other matter on Earth, the means by which light waves propagated. However, there is a difference; Kham (Akāsha) is not, for Hindus, associated with light, but with sound, the means by which sound propagates. Similar to western ether, Kham (Akāsha) also means ethereal space and is sometimes replaced by antariksha (atmosphere), the space between Earth and Heaven. Nevertheless, as one of the Five Elements (Mahābhūtas), it is conceived as a substance subtle and penetrating, filling the gaps between the particles of matter on Earth (Edgerton, 1965: 257n2). In Aristotelian cosmology, the universe was divided into two regions: the sublunar world and the supralunar world. The first region (sublunar) covered the Earth and the air up to the Moon and was composed of the four elements (air, fire, water and earth). In the second region (supralunar), the celestial bodies moved naturally in eternal, uniform and circular movements, without being subject to earthly laws. The stars, planets and celestial spheres were composed of an entirely different kind of matter, that is, the ether, the divine substance or the fifth element (fifth essentia). Unlike matter in the sublunar world, the celestial ether was pure and incorruptible (Kragh, 2007: 22).

Classic Sāmkhya[5] model is mentioned with twenty-five Tattwas:

“The Great Elements (Mahābhūtāni), Egoism (Ahamkāra),[6] Intellect (Buddhi) and the Unmanifested (Avyaktam), the ten senses (dashendriyāni),[7] the one (Mind)[8] and the five pastures of the senses (indriyagocharāh)”[9] (XIII.05).

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[5] A curiosity in Gītā is the fact that the word Sāmkhya is mentioned sometimes, as well as the enumeration of Tattwas, but it is not mentioned that Tattwas are a theme of the Sāmkhya tradition.

[6] The term अहंकार - ahamkāra, literally: aham "I" + kāra "author", therefore "I-author", more clearly: "I am the author", conveys the idea of selfishness and self-centeredness. The term is translated differently: sense of self, individuality, selfishness, self-awareness, self-centeredness, etc.

[7] These ten senses (indriyas) are the Five Organs of Knowledge (Jnānendriyas), eyes, ears, nose, tongue and skin; and the Five Organs of Action (Karmendriyas), hands, legs, mouth, genital organ and excretion organ.

[8] Mind (manas) is curiously called "one" (ekam) in this passage, as it is the eleventh sense.

[9] The compound word इन्द्रियगोचराः - indriyagocharāh has a poetic meaning in this passage, perhaps in order to metaphorize the word क्षेत्र - kshetra (field) mentioned in the previous verses, one of the many poetic beauties of Gītā. Gochara is a compound word that combines गो - go (cow) + चर - chara (range, length, horizon, pasture, pasture), therefore, literally, gochara means “cattle range”, “cattle pasture field” or “cattle pasture”, so it was literally translated as “five pastures of the senses” (pañcha indriyagocharāh). Most translators translate it interpretively

The twenty-fifth Tattwa is the Kshetrajna (Connoisseur of the Field), mentioned in verse XIII.02: “Know me as the Connoisseur of the Field in all fields ...”. This Connoisseur of the Field (Kshatrajna) corresponds approximately to the Purusha Tattwa of the Classic Sāmkhya.

Elsewhere, these tattwas (Principles of Existence) are listed hierarchically:
“They (the sages) say that the senses (indriyas) are superior. The mind (manah) is superior to the senses. The intellect (buddhi) is superior to the Mind. What is superior to the intellect is He”[10] (III.42).

In the Mokshadharma chapter of the epic Mahābhārata XII.267.28 (Critical Edition), 17 tattwas and an 18th, the Soul (देहिन् - Dehin) are mentioned. Therefore, in a verse later, XII.267.30,

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as "five objects of the senses", which is enlightening, but conceals the metaphor of this passage. These objects are पञ्च तन्मात्राणि - Pañcha Tanmātrāni (lit. the five measures of that), that is, the five objects corresponding to the sense organs: sound (shabda), touch (sparsha), form (rūpa), taste (rasa) and odor (gandha). Because it is a mythical-poetic text, Gītā has other passages like the one above, however, many of them are covered by adaptive translations that seek to convey the idea that Gītā is a text with a language of today (see: Botelho, 2020).

[10] This “He” is the आत्मन् - Ātman (Me), as well as the reference in the next verse III.43. This verse is very similar to verse III.10 in Katha Upanishad, as well as the passage Mokshadharma XII.267.16 (Critical Edition) of Mahābhārata (Edgerton, 1965: 288).

20 tattwas are mentioned (Edgerton, 1965: 289-90). The passage from Mokshadharma XII.306.53-72 mentions 24, 25 and 26 tattwas (idem: 328-9).

However, when we return to the later systems, those that have partially absorbed Sāmkhya's tattwica cosmology, we notice an increase in the number of tattwas, in order to adapt Sāmkhya cosmology to their respective theologies. For example, Kashmir's Shivaism lists 36 tattwas, that is, the 25 tattwas of Sāmkhya, recognized as tattwas of limited individual experience, and 11 more subtle tattwas predecessors, known as the tattwas of universal experience. The latter in hierarchical order are: 1.Shiva tattwa, 2.Shakti tattwa, 3.Sadāshiva tattwa, 4.Ishwara tattwa, 5.Sadvidyā tattwa, 6.Māyā tattwa, 7.Kalā tattwa, 8.Vidyā tattwa, 9.Rāga tattwa, 10.Kāla tattwa, 11.Niyati tattwa, henceforth the same enumeration of the 25 tattwas of the Classic Sāmkhya, totaling 36 tattwas (for a description of each of these 36 tattwas, see: Singh, 1982: xxi-xxviii).

In Bhāgavata Purāna XI.19.14, twenty-nine tattwas are listed, being 25 of Sāmkhya, more the 3 States of Matter, satwa, rajas and tamas,[11] which add up to 28, more a 29th, Paramātman, comprising all the others (Tagare, 1989, part V, 2030). It seems that the divergences in the enumerations were known and represented

[11] Interestingly, the three States of Matters (Gunas) are listed as Tattwas (Categories) in this passage.

concerns in the past, because, in a passage later in the same book, XI.22.2-3, Uddhava, stunned, asks the Lord why “some say the number of categories (tattwas) it is twenty-six, another twenty-five, some other seven; some claim to be sixteen, four or eleven respectively; while others claim it is seventeen, some sixteen, while others thirteen. Please explain to me, oh Lord, with what points of view the sages differently declare such a variety in the total number of categories (tattwas)” (Idem, 2050). Then, in verses 14-25 of the same chapter, the Lord lists the tattwas of each of the enumerations mentioned in the Uddhava doubt (Tagare, 1989, part V, 2052-4). Tattwas are often cited and described in Bhāgavata Purāna; some of the more extensive passages are II.5, III.5, III.7 and XI.22, through a considerably different interpretation of Classical Sāmkhya, especially by including the theistic character.

In Ahirbudhnya Samhitā VIII.1-23, a work from the Pāncharātra tradition,[12] the disciple Nārada, also stunned by the diversity of tattwas enumerations, “complains that there are so many different opinions about creation, some maintained that it is carried out by three elements (tattwas), others admitting four, others five, six, seven, eight, nine, ten or eleven elements (tattwas) ... ”. Then, Ahirbudhnya replies “that the diversity of opinion has several causes: first, the natural impossibility

[12] A Vaishnava tradition still popular in southern India.

of human language to adequately express the truths related to the Absolute; then, that person ignorant of synonyms (aparyāyavido janāh) often confuses different names with different things; that the intellectual achievements of men differ considerably and, finally, that God has an infinite number of different aspects, one of which is only generally understood and taught by a philosopher" (Schrader, 1995: 119-20).

In this Ahirbudhnya Samhitā, the tattwas of the Sāmkhya are listed in chapter VII, with changes and the introduction of subdivisions of the tattwas, at a stage of creation known in this system as Impure Creation (Ashuddhasrshti), after the exposures of Pure Creation (Shuddhasrshti), in chapter V, and Intermediate Creation (Shuddhāshuddhasrshti), in chapter VI (Matsubara, 1994: 203-38 and Schrader, 1995: 33-90).

The Many Enumerations

According to this system, the first two Principles, Purusha (Pure Consciousness) and Prakrti (Primordial Matter) exist distinct and separate from each other. Both are not created, they are out of time and space, they are stable, simple, they are not supported by anything else, they do not emerge and do not dissolve, have no parts and are independent. Pure Consciousness (Purusha) is inactive, so it does not create.

Primordial Matter (Prakrti) is creative, in the sense of generating a set of principles (tattwas) grouped in subdivisions, when it is activated by the catalytic presence of Purusha (Pure Consciousness). The relationship between Purusha and Prakrti is only one of co-presence.

The properties of Purusha (spirit) are listed in verse 19 of Sāmkhya Kārikā:

(1) "Witnessness" (साक्षित्वं - sākshitwam, property of being only a witness to any action)

(2) Isolation (कैवल्यं - kaivalyam)

(3) Indifference (माध्यस्थ्यं - mādhyasthyam)

(4) "Spectatorship" (द्रष्टृत्वं - drashtrtwam, the property of being a spectator of all actions) and

(5) "Unagentivity" (अकर्तृ - akartr, the property of not being an agent of the actions that happen in the world).[13]

Prakrti (02) is only creator and not created, from it emanate the 23 tattwas of the manifested universe (vyakta), from 03 to 25. These are

[13] In order to correspond to the nouns in the original Sanskrit, it was necessary to create nouns in English (witnessness, spectatorship and unagentivity). To avoid this difficulty, some translators transformed these nouns into adjectives: witness, isolated, indifferent, spectator and inactive), see: Sinha, 1915, appendix VI, 18; Takakusu, 1932: 27 and Larson, 1979: 261-2; some mixed nouns with adjectives: Jha, 1965: ८६ and Radhakrishnan, 1989: 432; and others translated all of them into the noun: Sharma, 1933: 30; Kumar, 1992, vol. II, 148 and Burley, 2007: 168.

characterized in the following enumeration (kārikā 10), the manifested (vyakta) is:

(1) Dependent on a cause (हेतुमत् - hetumat)

(2) Ephemeral (अनित्यं - anityam)

(3) Finite (अव्यापि - avyāpi)

(4) Active (सक्रियं - sakriyam)

(5) Multiple (अनेकं - anekam

(6) Dependent (आश्रितं - āshritam)

(7) Dissolvable (लिङ्गं - lingam)[14]

(8) Compound (सावयवं - sāvayavam)

(9) Subordinate (परतन्त्रं - paratantram)

Another classification is the following, according to Kārikā 03:

(1) Tattwa 02, creative and not created (अवृतिः - avikrtih): the Primordial Matter (Prakrti)

(2) The 7 Tattwas (03, 04 and 16 to 20) created and creators (प्रकृतिविकृतिः - Prakrti-vikrtih)

(3) The 16 Tattwas just created (विकृतिः - vikrtih): from 05 to 15 and from 21 to 25 (manas, 05

[14] Lingam is a term with many meanings, hence the differences in the translation of this verse. Those who translated with the meaning of "dissolvable" extracted this sense from the commentary by Gaudapāda (Sharma, 1933: 15), Tattwa Kaumudi by Vāchaspati Mishra (Jha, 1965: ५५) and the Chinese version of Paramārtha (Takakusu, 1932: 13-4). Shiv Kumar and D. N. Bhargava translated lingam by "inferential mark", according to the interpretation of the commentary Yuktidīpikā (Kumar, 1992, vol. II, 35; see also: Sinha, 1915: appendix VI, 09).

jnānendriyas, 05 karmendriyas and 05 mahābhūtas).

The classification in internal and external instruments (Kārikā 33):

(1) The 3 internal instruments (अन्तःकरणं - antahkaranam): Mahat (Intellect), Ahamkāra (Egoism) and Manas (Mind).

(2) The 10 external instruments (बह्यकरणं - bāhyakaranam): the 05 jnānendriyas (eye, ear, nose, tongue and skin) and the 05 karmendriyas (legs, hands, mouth, genitals and excretion organ).

According to Kārikā 11, the manifest (व्यक्त - vyakta) is:

(1) Consisting of the 03 gunas (त्रिगुणाः - trigunāh)

(2) Indiscriminate (अविवेकि - aviveki)

(3) Purpose (विषय - vishaya)

(4) Common (सामान्यं - sāmānyam)

(5) Unconscious (अचेतनं - achetanam)

(6) Proliferous (प्रसवधर्मि - prasavadharmi)

The 13 Instruments (त्रयोदशकरणाः - trayodashakaranāh), kārikā 32:

(1) The 10 instruments characterized by perception and holding (āharana-dhārana): the 05 jnānendriyas (capture and hold objects through perception) and the 05 karmendriyas (hold objects through the limbs).

(2) The 03 illuminating instruments (prakāshāh): Mahat (Inelect), Ahamkāra (Egoism) and Manas

(Mind) illuminate the instruments of the senses providing them with performances.

The 3 bodies are classified as follows (kārikā 39):

(1) Subtle body (सूक्ष्मशरीर - sūkshmasharīra) is eternal and invisible

(2) Body born of father and mother (मातापितृजाः - mātāpitrjāh) is perishable and visible

(3) Dense elements (भूतानि - bhūtāni), earth, water, fire, air and ether.

The enumeration of the 08 basic predispositions (bhāvas) of the Intellect (Buddhi), Kārikā 23:

a) The 4 satwic predispositions:

(1) Merit (धर्मः - dharmah)

(2) Knowledge (ज्ञानं - jnānam)

(3) Detachment (विरागः - virāgah)

(4) Power (ऐश्वर्यं - aishwaryam)

b) The 04 tamasic predispositions:

(5) Demerit (अधर्मः - adharmah)

(6) Ignorance (अज्ञानं - ajnānam)

(7) Attachment (अविरागः - avirāgah)

(8) Impotence (अनैश्वर्यं - anaishwaryam)

Failures in the perception of external objects can happen because of:[15]

(1) Extreme distance (अतिदूरात् - atidūrāt)

[15] Kārikā 07.

(2) Proximity (सामीप्यात् - sāmīpyāt

(3) Damage to the sense organs (इन्द्रियघातात् - indriyaghātāt)

(4) Absence of mind, inattention (मनोऽनवस्थानात् - manoanavasthānāt)

(5) Subtlety, smallness (सौक्ष्म्यात् - saukshmyāt)

(6) From the intervention of another object, concealment (व्यवधानात् - vyavadhānāt)

(7) Suppression by others, obfuscation (अभिभवात् - abhibhavāt)

(8) Mixing with what is similar (समानाभिहारात् - samānābhihārāt).

The Sāmkhya System defends the idea that the effect already exists in the cause, a doctrine called satkārya vāda. Therefore, the effect exists in the cause for the reason:[16]

(1) The impossibility of the non-existent to be created (असतकरणात् - asatakaranāt)

(2) The need for an appropriate cause (उपादग्रहणात् - upādānagrahanāt)

(3) The impossibility of all things arising from all causes (सर्वसंभवाभावात् - sarvasambhavābhavāt)

(4) The creation of that which is capable of creating (शक्तस्य - shaktasya)

[16] Kārikā 09. This is a verse with controversial translation, due to the concise wording for a complex subject that requires extensive explanation, therefore difficult to understand.

(5) The nature of the cause (कारणभावात् - kāranabhāvāt)

Of the Specific Principles (Tattwas, from the Intellect to the earth), there is an unmanifest cause, (Kārikā 15):

(1) Because of the finitude of the Specific Principles (परिमाणात् - parimānāt)

(2) Because of homogeneity (समन्वयात् - samanvayāt)

(3) Because of creation through power (शक्तः प्रवृत्तेः - shaktah pravrtteh)

(4) Because of the distinction between cause and effect (कारणकार्यविभागात् - kāranakāryavibhāgāt)

(5) Because of the uniformity of the world (अविभागात् वैश्वरूपस्य - avibhāgāt vaishwarūpasya).

The existence of Purusha (Consciousness) is justified as follows in Kārikā 17:

(1) Because aggregates or combinations exist for one another (संघातपरार्थत्वात् - samghātaparārthatwāt)

(2) Because this other must be apart or opposite to the three states of matter (त्रिगुणादिविपर्ययात् - trigunādiviparyayāt)

(3) Why there must be controlling power (अधिष्ठानात् - adhishthānāt)

(4) Because of the existence or need of a person enjoying pleasure and pain (भोक्तृभावात् - bhoktrbhāvāt)

(5) Because activity exists because of liberation (कैवल्यार्थं प्रवृत्तेः - kaivalyārtham pravrtteh).

The plurality of Purushas is justified in Kārikā 18 as follows:

(1) Because of the diversity of births, deaths and the means of cognition and action (जननमरनकरणानां - jananamaranakaranānām)

(2) Because of the actions that happen at different times (प्रतिनियमात् - pratiniyamāt)

(3) Because of the differences in the proportions of the three gunas (त्रैगुण्यविपर्ययात् - traigunyaviparyayāt).

Other Enumerations Extracted from Comments

The classification of the five Vital Ares (पञ्चप्राणाः - panchaprānāh or पञ्चवायवः - panchavāyavah), based on the enumeration by Gerald J. Larson (1987: 55), extracted from the commentary Yuktidīpikā by Sāmkhya Kārikā 29 (Kumar, 1992: Vol. II, 230- 41):[17]

[17] It is necessary to note that the nature, locations and functions of these five Vital Ares (prānas or vāyus) do not coincide in the comments, these are: the Yuktidīpikā comment (Kumar, 1992: vol. II, 230-41), the comment translated into Chinese by Paramārtha (Takakusu, 1932: 38-9), the comment Tatttwa Kaumudi by Vāchaspati Mishra (Jha, 1965: १०४-५), the comment by Gaudapādācharya (Sharma, 1933: 43-4) and the comment by Narendra of Tattwa Samāsa, sūtras 09-10 (Sinha, 1915: appendix V, 11-2).

(1) Breathing (प्राण - prāna): located primarily in the heart, but also circulating in the mouth, nose and lungs.

(2) Excretion (अपान - apāna): located in the navel and lower parts of the body

(3) Digestion (समान - samāna): located primarily in the region between the navel and the heart, but carrying nutrients equally to all parts of the body.

(4) Cognition (उदान - udāna): located primarily in the nose and brain, and enabling an organism to express intelligent sounds (communication, language and so on) and

(5) Homeostasis (व्यान - vyāna): penetrating the whole body and presumably maintaining the general physical and emotional balance of an organism.

The Five Sources of Action (पञ्चकर्मयोनयः - panchakarmayonayah) taken from the commentary Yuktidīpikā of Kārikā 29 of Sāmkhya Kārikā (Kumar, 1992: vol. II, 240).[18] The list is by Gerald J. Larson (1987: 55):

(1) Perseverance (धृति - dhrti)

(2) Faith (श्रध्दा - shraddhā)

(3) Desire for satisfaction (सुखा - sukhā or इच्छा - icchā)

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[18] These five karmayonis (sources of action) are also mentioned in Tattwa Samāsa's sūtra 09 (Kapila Sūtra), but with a different interpretation in Narendra's commentary (Sinha, 1915: appendix V, 11).

(4) Curiosity (विविदिषा - vividishā)

(5) Desire to not know (अविविदिषा - avividishā).

The Five Cognositive Faculties (पञ्चाभिबुद्धयः - panchābhibuddhayah), according to Narendra's commentary on sūtra 08 of Tattwa Samāsa (Sinha, 1915: appendix V, 10):

The 3 internal faculties:

(1) Buddhi (बुद्धि - Intellect)

(2) Ahamkāra (अहंकार - Selfishness)

(3) Manas (मनस् - Mind

The 2 external faculties:

(4) The Jnānendriyas (ज्ञानेन्द्रियाणि - eye, ear, nose, tongue and skin)

(5) The Karmendriyas (कर्मेन्द्रियाणि - mouth, hands, legs, genitals and excretion organs).

The hierarchical enumeration of the 14 types of creatures of the creation of sentient beings (bhautikah sarga), according to the comments of verses 53-4 of Sāmkhya Kārikā (Takakusu, 1932: 98; Sharma, 1933: 65; Jha, 1965: १४९ and Kumar, vol., 1992: 362):

The 8 celestial types (daiva):

(1) Brahma

(2) Prajāpati

(3) Indra

(4) Pitrs

(5) Gandarvas

(6) Yakshas

(7) Rakshasas

(8) Pishachas
The human type (mānushaka):
(9) Human
The 5 animal types (tairyagyonah):
(10) Cattle (pashu)
(11) Wild animal (mrga)
(12) Bird (pakshin)
(13) Reptile (sarīsrpa)
(14) Still thing (sthāvara)[19]

The 50 categories (पदार्थाः - padārthāh) mentioned in verses 47-51 of Sāmkhya Kārikā and specified in the comments:

The 5 Mistakes (विपर्ययाः - viparyayāh), 1-05:

(1) Tamas (तमस् - Ignorance) with 8 subdivisions, that is, failure to discriminate Pure Consciousness (Purusha) from the 8 creative Tattwas (Prakrti, Intellect, Egoism and the 5 Great Dense Elements).

(2) Illusion (मोह - moha) or concern for your own identity. It has 8 subdivisions, which is the search

[19] The inclusion of "immovable thing" (सथावर - sthāvara) is at odds with the rest of the creatures, since "immovable thing" is not a living creature (भूत - bhūta) of the creation of beings (भौतिकः सर्ग - bhautikah sarga). To avoid this problem, Gerald J. Larson translated the term तैर्यग्योन - tairyagyona (lit. of animal uterus) into "subhuman order", rather than "animal", to include the "immobile thing" mentioned in the comments (Larson: 1979: 271). M. Ganganath Jha translated the word मृग - mrga by "deer", instead of "wild animal" (Jha, 1965: १४९.

for mortal beings by the known 8 supernatural powers (ashtasiddhis).

(3) Extreme Illusion (महामोह - mahāmoha) or passionate attachment, with 10 subdivisions: attachments to the 5 Subtle Elements (Tanmātras) and the 5 Dense Elements (Mahābhūtas). Or attachment to the 10 basic social relationships (father, mother, son, brother, sister, wife, daughter, teacher, friend and colleague).

(4) Melancholy (तामिस्र - tāmisra) with 18 subdivisions, is the failure to reach the 8 supernatural powers (ashtasiddhis), or the annoyance with the 10 Material Elements (subtle and dense), or with the 10 basic relationships.

(5) Blind Melancholy (शन्धतामिस्र - andhatāmisra) is the instinctive fear of death, with 18 subdivisions. Unlike the previous case, due to ignorance, the individual develops attachment to the eight supernatural powers (ashtasiddhis) and the 10 basic relationships.

The 28 categories (padārthāh) of physical and mental disabilities (अशक्तयः - ashaktayah) (06-33):

11 of which are damage to the sense organs (blindness, deafness, numbness, muteness, etc.), damage to the 5 motor abilities (paralysis, etc.) and the mind, and 17 are related to damage to the intellect.

The 9 Satisfactions (तुष्टयः - tushtayah) (34-42)

The 4 Internal Satisfactions:

(34) Nature (प्रकृति - prakrti)

(35) Middle (उपादान - upādāna)

(36) Time (काल - kāla)

(37) Luck (भाग्या - bhāgyā)

The 5 External Satisfactions are the 5 Abstinences:

(38) From earning (wealth)

(39) From accumulating

(40) From wasting

(41) From pleasures

(42) From killing

The eight Categories (padārthāh) that represent the authentic conquests (siddhis) that lead to the final liberation (43-50):

(43) Rational reflection (had)

(44) Proper instruction from a qualified master (shabda)

(45) Careful study (adhyayana)

(46) Reflective discussion with appropriate partners (suhrtprāpti)

(47) An open disciplined temperament (dāna)

(48) A progressive overcoming of the frustrations of the body and the mind

(49) A progressive overcoming of the frustrations of material and social existence

(50) A progressive overcoming of frustrations related to the cycle of births and deaths.

The Sāmkhya System in its Time and Place

When situated in the culture of antiquity, Sāmkhya represents a formidable speculative feat for that time, when few people had literature, much less investigative curiosity. Gerald J. Larson summed up the importance of Sāmkhya in the culture of southern Asia: “As it is well known, the influence of Sāmkhya is general in the cultural life of South Asia, not only in philosophy, but also in medicine, law, politics, mythology, cosmology, theology and devotional literature. Sāmkhya was evidently a direct descendant of ancient and unsystematic Upanishadic speculation, a precursor to much of India's scientific literature and a longtime relative of early philosophical efforts in South Asia (including the Jain, Buddhist, Vaisheshika, Mīmānsā and Yoga traditions) (Larson, 1987: 43). Meaning that, Sāmkhya has many merits, but when well framed in its time and place.

However, when, on the other hand, he is pointed out by dazzled admirers as a contemporary philosophy, as some modern Hindu interpreters, theosophists and esotericists still do, or even as a complement to current Science, such as Sri Aurobindo's delirious statement that “Sāmkhya explains what modern science leaves in

obscurity" (Aurobindo, 1997: 74).[20] For, when perceived from the perspective of the development of ideas, Sāmkhya represents a set of obsolete ancient speculations plastered by conservatism. Therefore, when understood from a historical perspective, we can recognize its speculative successes in the past, achieved through reasoning and logic, at a time and place surrounded by myths and superstitions about the creation and structure of the world. Sāmkhya was something like a first Enlightenment movement in India, which sought to know creation through rational speculation, something like the autonomy of the intellect from its dependence on myths and superstitions, an

[20] On the contrary, some scholars perceive many obscurities is in the Sāmkhya system. One of the most striking, for example, is that reproduced by Johannes Bronkhorst, quoting Eli Franco, regarding the obscurity of cosmology: "One of the reasons why many of us feel uncomfortable with the Sāmkhya philosophy is that we are never quite sure where we are standing. In addition, whether the old masters were talking about psychology or cosmology. Typical individual and psychological terms such as cognition, ego, mind, sense organs and even hands, feet, tongue, anus and penis, become trans-individual and take on cosmological dimensions "(Bronkhorst, 1999: 679, quoting Eli Franco : 1991: 123). Strictly speaking, when we study the Sāmkhya doctrine dispassionately, what we realize is that it is more classifying and enumerative than explanatory, hence the name Sāmkhya (enumeration, calculation, numeral). Comparatively, it explains much less than even the ancient Scala Naturae (Ladder of Nature) of Greek philosophers, later absorbed and developed by Medieval Christianity.

intellectual feat similar to pre-Socratic philosophers in Ancient Greece.

Anyway, Sāmkhya has its merits when well framed in its time and place, now, very different is trying to update the primitive speculations of Sāmkhya, or even placing them on a step above current scientific knowledge, just as they do some dazzled contemporary interpreters.

As a system, it never became an institutionally organized religion, but it remained a speculative tradition for some centuries, until it merged with Patanjali's Yoga system, serving as a theoretical support, a union that came to be known as the Sāmkhya-Yoga System, that is, Sāmkhya the theoretical side and Yoga the practical side of the system. Therefore, when we read the Sāmkhya literature, except for the later comments, we realize its independence from Vedic orthodoxy, hence the confrontations with the orthodox systems in the comments. Even so, he was canonized as one of the Six Orthodox Systems of Hinduism (Vaidika Darshanas).

Its ideas were absolved by some Hindu religious systems, especially the doctrines of Tattwas and Gunas, as cosmological and psychological models respectively, such as the Bhāgavatas, the Pancharātra tradition, the Kashmir Shivaism, the Patānjali Yoga, the Shaiva Siddhānta and the Shākta Tantra. Despite the differences in classifications, their influence on the

enumerations of the elements of existence in Buddhism and Jainism can be considerable.

Evolutionism Made the Typology More Flexible

Despite the primitivism and obsolescence of speculations, the doctrines of Sāmkhya are still recognized as current and followed by many devotees in Hindu religions and by contemporary Esotericists. So Vishnuists, Shivaists, Yoga practitioners, Theosophists and Esotericists understand that the tattwas cosmology is an eternal, therefore current, revelation.

However, without knowledge of the mechanism behind the changes over time, ancient speculators were only able to understand the world from a synchronic perspective, that is, everything has always been the way it is now. Thus, the categorization and enumeration of things and phenomena were enlightening views for the ancients, as they put things in their proper places and in a hierarchical order. A well-known example in European culture is the Scala Naturae (Ladder of Nature), also known as the Great Chain of Being, a hierarchical typology of beings and things beginning with God, followed by angels, demons, stars, the Moon, the kings, nobles, commoners, domestic animals, wild animals, plants, precious stones, precious metals and other minerals, created by Greek philosophers (Plato, Aristotle, Plotinus and Proclus), later absorbed and

developed by Medieval Christianity, until it reached its peak in Renaissance Neoplatonism (Lovejoy, 1978: passim). Finally collapsed in the 19th century with Charles Darwin's enlightening Theory of Species Evolution and with the subsequent findings in the 20th century of the occurrence of Evolution in the universe, in nature, in society, in language, in culture, etc.

By introducing historicity into the sciences, Charles Darwin (1809-82) changed everything, from biology to the other sciences (Cosmology, Geology, Linguistics, etc.), including the worldview of people in general. No other idea has been more influential than Evolutionism. As such, it was a blow to the uncompromising criteria of strict categorization of static items within a class or a species. In addition, unaware of the billions of years of evolution of the universe and the Earth, the ancients thought that everything emerged in the same way that it appears at the moment. For example, man has always been the same, either physically or culturally, as well as the Earth has always been the same, without geological changes in the crust, in the mantle, on the surface, consequently in geography, items that have changed a lot during the many geological ages. Anyway, the old speculations were speculations without historicity. So, if religious and esotericists understand that the early speculations were divine and eternal revelations, why did the ancient seers (tattwavids) not introduce historicity into their

revelations in the past, instead of treating everything synchronously?

Evolutionism, among many other results, is a collapse of the Sāmkhya idea of typological enumeration of the universe in strict hierarchical categories (tattwas), the speculation was so primitive that, as we mentioned above, it confused cosmology with psychology. Thus, in some passages of its literature, it is not possible sometimes to identify if mahat (intellect) is a cosmic principle (tattwa) or a psychological principle, the same with the mind (manas) and the senses (indriyas). Therefore, perhaps in an attempt to correct this confusion, the systems that absorbed the Sāmkhya doctrine of the tattwas enumerated these principles differently. For example, Kashmir Shivaism listed and classified the 25 tattwas of Sāmkhya as Tattwas of the Limited Individual (Purusha and Prakrti), Tattwas of Mental Operation (Mahat, Ahamkāra and Manas), Tattwas of Sensitive Experience (the Jnānendriyas, the Karmendriyas and the Tanmātras) and the Tattwas of Materiality (the 5 Mahābhūtas). In addition to these, the five Tattwas of Limited Individual Experience, absent from the Classical Sāmkhya classification (Kalā, Vidyā, Rāga, Kāla, Niyati) (Singh, 1982: xxiii-xxviii). Cosmic tattwas, on the other hand, were listed as Tattwas of Universal Experience (Shiva tattwa, Shakti tattwa, Sadāshiva tattwa, Ishwara tattwa and Sadvidyā tattwa) (idem, xxii-xxiii).

Evolutionism proved that there is no immutable species, Charles Darwin had already postulated the idea of Species Non-constancy, that is, that species are constantly evolving. In addition, it excluded teleology from the study of nature, that is, it proved that there is no teleological march of all species towards greater perfection, with the discovery of the mechanism of natural selection behind the changes.

Very Incomplete Classification

When reading the doctrines of Sāmkhya, the first idea that must be taken into account is the primitivism of speculations, that is, that we are reading about the curiosities of researchers from a very distant past without instruments, tools and scientific research resources, therefore a modality of pre-scientific investigation. For anyone who knows the current sciences, when reading about the Sāmkhya classification of tattwas, perceives the incompleteness and superficiality of the enumeration, when compared with the many scientific discoveries that occurred during the following years. To list all the advances here would be impossible, due to the countless number of subsequent discoveries. However, for the moment, I will analyze only a few items that call attention for obsolescence. In the enumeration of tattwas, in the process of the emergence of the universe, the focus is almost exclusively on man, therefore a

creation more anthropocentric than cosmic, which ignores the millions of other species that exist or have existed. We know very well today that the human model does not serve as the universal model of creation, since man is just one species among millions of others that exist or have already existed. In addition, the ancients did not know the indispensable role of the brain in the functioning of the intellect, the mind, and the cognitive and motor senses. We know today that the functioning of these organs is much more complex than the primitive and naive simplicity exposed in the Sāmkhya interpretation. To give just one example, in the Sāmkhya system only the 5 external cognitive senses (jnānendriyas) are listed, as the ancients did not know the internal senses. Today we know that the sense of touch is divided into an external and an internal sense. The sense of touch (perception by contact), for example, is divided into 4 other external and internal senses discovered later:

a) Somatosensory System: complex system of sensory neurons and neural pathways that responds to changes on the surface and within the body.

b) Proprioception or kinesthesia: it is the ability to perceive the spatial location of the body, its position and orientation in the environment, the force exerted by the muscles and the position of each part of the body in relation to the others. This

is the sensory ability that we are able to sleep without falling out of bed during sleep.
c) Thermoception: is the perception of thermal changes in the environment (example: cold or hot) and inside the body (example: the heat of fever).
d) Nociception: is the perception of aversive stimuli, transmission, modulation and perception of aggressive stimuli. The damage receptors in this system are called nociceptors. A very common perception is pain.

Furthermore, even with regard to the senses, the ancients did not know the orientation through echolocation, that is, the emission of ultrasound (biosonar) that echoes in contact with obstacles, peculiar to whales, dolphins and bats, making these animals be able to perceive objects or creatures in murky water and darkness respectively. In addition, the ancients did not know the extraordinary orientation through the perception of the Earth's magnetic field in migratory birds. Well, the examples of later discoveries are many, if all are listed, a very extensive encyclopedia would be needed.

Another reason why the senses are not categorized so rigidly, due to the possibility of the brain interfering in the cognition process, an example among others, is the occurrence of synesthesia, that phenomenon of cognitive distortion that occurs in the brain, whose stimulus of a modality sensorial allows the experience of a different sensorial modality. That is, the sound is

seen as a form, the sound is perceived as an odor or as a color and so on, the combinations are many. Synesthetic experiences have been noticed for many centuries, however they began to be studied neurologically only from the first decades of the last century (for details, see: Robertson & Sagiv, 2005 and Cytowic, 2018).

Reverse Order of Creation

When compared to the current order of formation of the universe and the Earth, recognized by Natural History, the order of creation in Sāmkhya happened in the opposite direction, that is, from the end to the beginning. For what first appeared in the scientific history of creation was what appeared last in the Sāmkhya speculation (Christian, 2004; Langmuir, 1012 and Baggott, 2018). According to this last system, the complement of creation happened with the appearance of the 5 Dense Elements (Mahābhūtas: earth, air, water, fire and ether), after the creation of Intellect, Egoism, Mind, Cognitive Senses and Motor Senses, as well as after the appearance of the 5 Subtle Elements: form, odor, taste, touch and sound. A process of creation in this way is only possible if it occurs instantly, or almost simultaneously, otherwise, if the 5 Elements of Materiality (Mahābhūtas) were created last, according to the long time it takes for the creation of the world, vision would not have

what to see, the ear would not have no sound to hear, the organs of action (legs) would have nothing to walk on, the mind would have nothing to think about and the intellect would have nothing to reason about, too, the body of the newly created man would have nothing to eat, since the Earth did not yet exist. The creation of man before the creation of the world does not only contradict the explanation of Natural History, but also almost all mythological versions of creation in other traditions. For example, in the most extensive account of the Bible (Genesis, 01: 01-27), the order of creation is as follows: first heaven was created, then waters, earth, flora, sun and moon, fauna and finally man. Anyway, the order of the appearance of the universe in Sāmkhya goes against almost all other mythologies and the scientific history of creation (for further details, see: Kragh, 2004; 2007 and Baggott, 2018).

Cosmology Without Astronomy

The so-called Sāmkhya cosmology is so clumsy and so contaminated by anthropocentrism that some authors even dismiss it as cosmology itself, or even as ancient cosmogony. The author Helge S. Kragh, for example, in his comprehensive reference work: *Conceptions of Cosmos: From Myths to the Accelerating Universe: A History of Cosmology* omitted the mention of Sāmkhya cosmology when he dealt with the old conceptions

of the cosmos in the first chapters. He mentioned in one paragraph the Hindu doctrine of cosmic cycles (yugas), but he did not mention the doctrine of tattwas as cosmology, nor as cosmogony (Kragh, 2007: 13).

For, it is not uncommon to find authors talking about “Sāmkhya Cosmology” in their books and articles, with the conviction that what is exposed by the followers of this tradition is cosmology in the scientific sense of the term, or even in the contemporary sense of cosmology. Well, first, it is necessary to clarify that this imaginary “Sāmkhya Cosmology” is a cosmology without astronomy, that is, without the components of the cosmos such as stars, planets, moons, comets, asteroids, gravity, nebulae, black holes, stardust, etc. For, strictly speaking, there is no, and there never was not, a cosmology without astronomy. A cosmology without astronomy is something like mathematics without the number, or engineering without the physics, or philosophy without the logic, and to say it in a comical way, it is something like a dinner without food.

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